import java.util.Scanner;

public class TicTacToe {

 public static void main(String[] args) {

 System.out.println("You will play Tic Tac Toe against the computer. You will enter an X, Y coordinate \nto choose the space on the board you wish to place your mark.");

 char [] [] ttt = new char [3][3];

 boolean playerWin = false;

 boolean computerWin = false;

 boolean catsGame = false;

 initializeBoard(ttt);

 while(!playerWin||!catsGame||!computerWin)

 {

 playerMove(ttt);

 if(checkPlayerWin(ttt)) break;

 if(checkCatsGame(ttt)) break;

 computerMove(ttt);

 if(checkComputerWin(ttt))break;

 }

 }

public static void initializeBoard( char [] [] board)

{

 for (int y = 0; y < 3; y++)

 {

 for (int x = 0; x < 3; x++)

 {

 board[x][y] = '-';

 }

 }

}

public static void playerMove(char [] [] board)

{

 Scanner s = new Scanner(System.in);

 boolean legalMove = false;

 while(!legalMove)

 {

 System.out.println("Enter your move as two integers separated by a space");

 int x = s.nextInt();

 int y = s.nextInt();

 if (board[x][y] == '-')

 {

 board[x][y] = 'X';

 legalMove = true;

 }

 else System.out.println("That space has already been chosen. Try another");

 }

 outputBoard(board);

}

public static boolean checkPlayerWin(char[][] board)

{

 boolean winner = false;

 //check horizontal wins

 for(int y = 0; y < 3; y++)

 {

 winner = true;

 for(int x = 0; x <3; x++)

 {

 if (board[x][y] != 'X') winner = false;

 }

 if (winner)

 {

 System.out.println("You win!");

 return true;

 }

 }

 //check vertical wins

 for(int x = 0; x <3; x++)

 {

 winner = true;

 for(int y = 0; y < 3; y++)

 {

 if (board[x][y] !='X') winner = false;

 }

 if (winner)

 {

 System.out.println("You win!");

 return true;

 }

 }

 //check diagonals

 if (board[0][0] == 'X' && board[1][1] == 'X' && board[2][2] == 'X')winner = true;

 if (board[2][0] == 'X' && board[1][1] == 'X' && board[0][2] == 'X') winner = true;

 if (winner)

 {

 System.out.println("You win!");

 return true;

 }

 return false;

}

public static void outputBoard(char [] [] board)

{

 for (int y = 0; y < 3; y++)

 {

 for (int x = 0; x < 3; x++)

 {

 System.out.print(board[x][y]);

 }

 System.out.println();

 }

}

public static boolean checkCatsGame(char [] [] board)

{

 for (int y = 0; y < 3; y++)

 {

 for (int x = 0; x < 3; x++)

 {

 if (board[x][y]=='-') return false;

 }

 }

 System.out.println("Cat's game. It's a tie.");

 return true;

}

public static void computerMove(char [] [] board)

{

 System.out.println("Now the computer's turn...\n");

 boolean legalMove = false;

 while(!legalMove)

 {

 int x = (int)(Math.random() \* 3);

 int y = (int)(Math.random() \* 3);

 if (board[x][y] == '-')

 {

 board[x][y] = 'O';

 legalMove = true;

 }

 }

 outputBoard(board);

 }

public static boolean checkComputerWin(char [] [] board)

{

 boolean winner = false;

 //check horizontal wins

 for(int y = 0; y < 3; y++)

 {

 winner = true;

 for(int x = 0; x <3; x++)

 {

 if (board[x][y] != 'O') winner = false;

 }

 if (winner)

 {

 System.out.println("Computer wins.");

 return true;

 }

 }

 //check vertical wins

 for(int x = 0; x <3; x++)

 {

 winner = true;

 for(int y = 0; y < 3; y++)

 {

 if (board[x][y] !='O') winner = false;

 }

 if (winner)

 {

 System.out.println("Computer wins.");

 return true;

 }

 }

 //check diagonals

 if (board[0][0] == 'O' && board[1][1] == 'O' && board[2][2] == 'O')winner = true;

 if (board[2][0] == 'O' && board[1][1] == 'O' && board[0][2] == 'O') winner = true;

 if (winner)

 {

 System.out.println("Computer wins.");

 return true;

 }

 return false;

}

}